Young, S., Le Souef, P.N., Geelhoed, G.C., Stick, S.M., Turner, K.J., Landau, L.I. "The Influence of a Family History of Asthma and Parental Smoking on Airway Responsiveness in Early Infancy" The New England Journal of Medicine 324: 1168-1173, 1991.

ABSTRACT. Background. Airway responsiveness to inhaled nonspecific bronchoconstrictive agents has been demonstrated in normal, healthy infants. However, it is unknown whether airway responsiveness is present from birth or if it develops as a result of subsequent insults to the respiratory tract. To investigate this question, we assessed airway responsiveness in 63 normal infants at a mean age of 4 1/2 weeks.

Methods. Respiratory function was measured with use of the partial forced expiratory flow-volume technique to determine the maximal flow at functional residual capacity (VmaxFRC). The infants inhaled nebulized histamine at sequentially doubled concentrations (0.125 to 8.0 g per liter), until a concentration was reached at which the VmaxFRC fell by 40 percent from the base-line value (PC40) or until a concentration of 8.0 g per liter was reached. We also assessed maternal serum levels of IgE, cord-serum levels of IgE, the infants' skin reactivity to several allergens, and the parents' responsiveness to histamine and obtained family histories of asthma and smoking.

Results. Aiway responsiveness was increased in infants with a family history of asthma (n= 19; median PC40, 0.78 g per liter; 95 percent confidence interval, 0.44 to 1.15; P<0.01), parental smoking (n= 13; median PC40, 0.52 g per liter; 95 percent confidence interval, 0.43 to 5.40; P<0.05), or both (n= 20; median PC40, 0.69 g per liter; 95 percent confidence interval, 0.37 to 2.10; P<0.05), as compared with the infants with no family history of asthma or smoking. The infants with no family history of asthma or smoking had a median PC40 of 2.75 g per liter (95 percent confidence interval, 1.48 to 4.00). No significant relations were detected between the immunologic variables and the PC40 in the infants.

Conclusions. This study indicates that airway responsiveness can be present early in life and suggests that a family history of asthma or parental smoking contributes to elevated levels of airway responsiveness at an early age.